

Authors response to egusphere-2025-5142

"Evidence of gravity wave contribution to vertical shear and mixing in the lower stratosphere: a WISE case study"

Umbarkar et al.

Response to Editor

We thank the editor for his comprehensive comments on the manuscript. Comments provided by editor are addressed in the revised version of the manuscript.

Editor comments are given in *italic*, replies in standard and corresponding revised text passages in *blue*.

Comment: *The referees were broadly satisfied with the previous version of the paper and you have made a good effort to address their additional comments in this latest revision. There I see the paper as very close to being suitable for publication in ACP.*

The most recent referee comments included comments on (i) the abstract and (ii) the use of language.

With regard to (i) there are clear guidelines for the abstract given at: https://www.atmospheric-chemistry-and-physics.net/policies/guidelines_for_authors.html and at present your abstract does not seem to meet these. Therefore please in the next version of the paper provide a revised abstract.

» We thank the Editor for this comments. We have revised the abstract in the revised manuscript to comply with the journal's guidelines.

Comment: *With regard to (ii), there is still scope for improvement (though I realise that this is not easy for authors whose first language is not English). In reading the latest version of the paper I noticed the following as an example:*

l64: 'A particular interesting turbulence which occurs in the lower stratosphere is induced by shear and often occurs in clear sky conditions. The identification of this clear air turbulence (CAT) is crucial for safety aspects in commercial aviation as well as for mixing of trace species and as such the chemical composition in the UTLS ...'

The sentence structure is a bit odd and therefore unclear – e.g. this would be better as:

Clear air turbulence (CAT) is a particularly important form of turbulence which occurs in the lower stratosphere and is induced by shear. The identification of CAT is crucial for safety in commercial aviation. CAT is also important for mixing of trace species and hence for the the chemical composition of the UTLS ...'

It was not possible for the referees to provide detailed comments of this type for the whole paper and neither is it possible for me. But please consider this as an example of how the language might be clearer and please check the paper as a whole –

perhaps as a small group of co-authors – and consider whether the language may be made clearer and more concise. I very much hope to accept the next version of your paper for publication.

» Right. The given text has been revised as

A particularly important manifestation of GW-induced turbulence in the lower stratosphere is shear-induced clear-air turbulence (CAT). Identifying CAT is crucial for aviation safety and for understanding the mixing of trace species and, consequently, the chemical composition of the UTLS ...

» We have carefully addressed all the comments provided by the Editor and revised the manuscript thoroughly. We hope that the revisions satisfactorily address all the points raised and have improved the overall quality and presentation of the manuscript.